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National Bureau of Standards Graduate School

BY WALLACE R. BRODE*

THE GRADUATE SCHOOL of the National Bureau of Standards is the oldest of the several advanced educational programs sponsored by governmental agencies to provide advanced educational opportunities for employees. The National Bureau of Standards Graduate School was established in 1908 by S. W. Stratton, then director of the Bureau and later president of the Massachusetts Institute of Technology. The National Bureau of Standards Graduate School has operated continuously during its 43 years of existence. In the celebration this year of the Bureau's 50 years of establishment, it seems fitting to recognize the educational contribution made by the Bureau.

Operated for Its Own Employees

The Graduate School of the National Bureau of Standards is operated essentially for its own employees and in its own particular zone of scientific responsibility; hence courses in other fields such as biological sciences and economics have not been included. The limitation of training to the Bureau's field of specialization has meant that experts from the Bureau's staff were readily available for instructors and even laboratory facilities were available for demonstration or student use. The graduate school is operated by an educational committee which includes a chairman and members who are appointed by the Director of the National Bureau of Standards and a limited number of members elected by the student body.

*Associate director, National Bureau of Standards. Dr. Brode is chairman of the Educational Committee which operates the graduate school.

In the 43-year period of existence, the NBS Graduate School has offered some 250 courses with a student enrollment of approximately 6,500. The instruction in these courses has been given by well-qualified Bureau staff members or by professors or staff members from neighboring universities or institutions. The present associate directors of the Bureau, a former director, and many of the Bureau's leading scientists have contributed their instructional services, and not a few were, in their earlier years at the National Bureau of Standards, students in the school.

Degrees Not Granted

The NBS Graduate School is not a degree-granting institution; application of work done towards a degree must be by transfer of credit through the registrar of the NBS Graduate School to the appropriate office of the university concerned. Many students, however, take courses for cultural im-

IN THIS ISSUE

	Page
Bureau of Standards Graduate School	121
Guest Speakers at Ohio State	123
Production of Scientists in the U. S	124
Improvement of Higher Education in Japan	127
Defense Information Bulletin	130
Course for Editors of Alumni Publications	131
International Week End	131
Problems of an Atomic Age	131
New Publications	131

982868—52

provement, and others for the purpose of establishing advanced professional standing. The Civil Service Commission accepts properly certified credits from the NBS registrar as from other accredited educational institutions.

More than 150 doctor of philosophy degrees have been obtained by students who have used either course or dissertational work done at the National Bureau of Standards as a partial fulfillment of the requirements. The list of universities which have accepted the advanced work done at the National Bureau of Standards is essentially the same as that of the American Association of Universities.

Two Changes

In the evolutionary process which is part of the continuous advance and growth of our educational institutions and concepts, it would be expected that the NBS Graduate School would change. A part of this change has resulted from the shortage of trained technical personnel which has required some on-the-job or in-service training on the higher academic levels. The in-hours courses are such courses as are considered an essential part of the student's work in the Bureau and are taken as an integral part of his required service. Out-of-hours courses are given outside of work hours. Other than in the time of offering, no differentiation in academic requirements for admission or for completion of the work is made in the two types of courses. Registration in in-hours courses is limited to NBS personnel who are directed to take such training by their supervisors or to personnel in other departments or bureaus.

The growth of extension activity in American universities and the increasing emphasis on science in neighboring universities have brought about another gradual change in the NBS Graduate School, in that many of the courses which are given at the National Bureau of Standards are sponsored by some recognized university in which the student registers and receives residence credit, as well as academic credit. The selection of the course and the instructor in these cases is made jointly by the National Bureau of Standards Graduate School and the university concerned.

Services

The NBS Graduate School, in the current catalog of its courses for 1951–52, which has just been issued, lists 34 courses in the following fields: Mathematics, physics, chemistry, engineering, technology, general, and colloquia.

On the basis of enrollment in previous years, it is anticipated that approximately 600 students will be enrolled in one or more of the courses in 1951–52.

The Graduate School of the National Bureau of Standards and the educational committee conduct a number of seminars and colloquia in addition to regular courses. The subjects scheduled for 1951–52 include general chemistry, polymers, thermodynamics, heat engineering, low temperature, and instrumentation. A general bureau staff lecture is arranged each week as are special division lectures by staff or visiting scientists. The lectures are listed in a weekly technical calendar which is issued by the educational committee.

Authority granted in public laws permits the National Bureau of Standards to make its facilities available to advanced students. Many students and guests are taking advantage of the opportunity to receive specialized advice and to work with equipment in the bureau. A goodly number have been able to do a part of their dissertational work at the bureau. To assist these students, as well as to coordinate their work with that in the universities, the graduate school provides research advisers in the principal technical fields.

The NBS is also host to a number of foreign guest workers and trainees who have been brought to this country as a part of the Government foreign aid program. The NBS has been recognized by the State Department and its agencies as an educational institution for holders of Fulbright fellowships and for the visitor exchange program.

The Veterans' Bureau has recognized the NBS Graduate School as an institution of higher learning for use under the veteran educational benefit program.

The many invitations and recognitions which the National Bureau of Standards receives in connection with presidential inaugurations at universities and colleges and similar educational occasions constitute ample confirmation of the educational and research status which the Bureau occupies in the academic circles of this country and abroad.

Library

One of the most important adjuncts to the graduate school is the Bureau's technical library, which has recently been moved to new and larger quarters. Various circumstances have combined to make it

one of the leading technical libraries of the Nation. The library has been developed over a long period of time. It is a depository for technical material received by the Library of Congress and it receives a wealth of material through exchange with many publications.

Branches

With the governmental pressure for dissemination of important technical facilities to provide safety from possible destruction and better distribution of research facilities, the NBS has recently established two important branch laboratories, one at Boulder, Colo., and one at Corona, Calif. Where practical, both in Washington and at the branch laboratories, courses are being established with the cooperation of neighboring universities. Where such universities are unable to sponsor specialized courses, the NBS Graduate School independently offers these courses as well as the in-hours courses and cooperative sponsorship of work with adjacent universities.

Guest Speakers at Ohio State

The Board of Trustees of Ohio State University has approved the following interpretation of the rule relative to the screening of guest speakers at the university.

I. Procedures

"The responsibility for initiating an invitation to an individual to speak on the campus or under university auspices and the determination of the fitness of such an individual to speak under such circumstances is now and has always been primarily a faculty responsibility subject to university administrative procedures. If a faculty member proposes to have someone speak on the campus or under university auspices and there exists a doubt as measured by generally accepted standards as to whether the proposed action would be in the best and over-all interest of the university, appropriate action through channels shall be initiated by the faculty member concerned. In case of doubt, as indicated above and before the invitation is issued, the faculty member concerned shall consult with his colleagues and cause the matter to be referred through his appropriate department chairman and dean to the president's office for advice and action. This procedure shall be observed also by a faculty member acting as an accredited adviser to a student organization.

II. Committee on Evaluation

"That a standing committee be established to be known as the committee on evaluation and to consist of nine members, namely, the president of the university, the three vice presidents, and five members of the faculty elected by the faculty council.

"The president shall be chairman of the committee. The purpose of the committee shall be to evaluate the functioning of the aforesaid policy of responsibility as expressed in part I, to ascertain whether adequate opportunities are being provided for full expression of the different points of view and whether the Nation, the State, and the university are being properly served in university public discussion and to make suggestions and recommendations concerning the carrying out of the stated policy. The committee shall meet at any time on the call of the chairman or any five members and shall annually make a general evaluation and report for the preceding year.

III. Principles

"The university favors the fullest academic freedom consistent with its educational program and national security. It believes that steadfast adherence to the principles of free discussion and investigation, with equal responsibility, is the cornerstone of such an institution in a free society; that the continued strength of the educational process depends upon an unqualified dedication to our traditional freedoms and the preservation of the moral and intellectual integrity of the teacher. In America, in contrast to most of the world, the molding of the lives of our young people outside the family circle is largely entrusted to the teacher and the church and we hold inviolate the right of a teacher to discuss fully and freely all aspects of his subject, observing that honesty and objectivity must always be cardinal principles in teaching, and that one who is not free in conscience has neither the right to teach nor to speak.

"That judgments as to what constitute "generally accepted standards" will vary with the times and places and, without attempting to define or limit the phrase, there is general agreement that those who are subversives or those who are allied to them in purpose or action or those whose views do not contribute to the university's educational program are not acceptable as speakers."

Production of Highly Educated Scientists in the United States

By DOUGLAS E. SCATES and ALICE V. YEOMANS*

DURING 1949 and 1950 the Office of Naval Research sponsored an intensive study of scientists who had earned doctor's degrees during the recent past. The study included doctor's degrees earned in the physical and biological sciences in the United States during the 13-year period 1936–48. Part of the information was obtained from questionnaires filled out by scientists in connection with a study made by the National Research Council under the direction of M. H. Trytten. Additional material was gathered directly from individual scientists and from educational institutions through careful follow-up over a period of nearly 2 years. In order to provide a background for this particular period, a study was also made of the doctor's degrees granted earlier in this country. Data were gathered from several sources to establish two basic series, one showing the number of doctor's degrees granted each year in all fields of study from 1873 to the present, and the other showing the number of degrees in the science fields from 1898 to the present.

Historical Trends

The number of doctor's degrees granted annually in all fields of study has increased at a rapid rate. The trend has been generally concave upward, indicating an exponential growth. The number has almost doubled every 10 years from 1880 to 1950. The figure of 6,600 degrees granted in 1900, although much higher than any previous number, is not above the long-time trend, and therefore does not represent any compensation for losses during the last war. Unless basic conditions change, the 1960 figure should be practically twice as high as the 1950 figure.

The curve showing the number of doctorates granted in science fields follows virtually the same pattern as the curve for degrees in all fields. The proportion of doctor's degrees earned in science fields has remained close to 55 percent of the total number for all fields each year since 1910, and has not shown any tendency in recent years either to increase or decrease. There were about 3,500 doctor's degrees in the sciences granted in 1950.

During certain critical periods in the Nation's history fewer degrees were granted than the normal trend would call for. Losses in the production of doctorates in the sciences alone were estimated at about 500 during World War I, about 1,000 in the depression of the thirties, and about 10,000 during World War II. As mentioned above, there is no indication in current figures of any compensation for these losses.

The number of doctorates granted annually in science has, since 1900, increased 19 times as fast as the population of comparable age. At present rates, 1 person in each 700 born is destined to obtain a doctorate in science. For males, the current ratio is 1 in each 400 born.

Living Scientists

The number of living scientists not over 70 years of age and having doctorates earned in the United States roughly paralleled the number of degrees granted; it trebled from 1890 to 1900 and more than doubled each decade from 1900 to 1940. It fell well below the trend for 1950, however, showing the effects of the losses during World War II.

About 40,000 persons not over 70 years of age and having doctor's degrees in science earned in the United States were estimated to be living in 1950. There is now one living scientist with a doctor's degree for about every 4,000 persons in the general population, or one for every 140 persons who have a bachelor's degree.

*Dr. Scates is at present professor of education at Queens College, New York City; Dr. Yeomans is director, research on scientific personnel, Office of Naval Research Projects, American Council on Education. The article summarizes the major findings of a study made by the Research Staff of the American Coun il on Education, directed by Douglas E. Scates, under contract with the Office of Naval Research. Complete data are presented in the report *The Production of Doctorates in the Sciences: 1936–1948*, which was prepared by Douglas E. Scates, Bernard C. Murdoch, and Alice V. Yeomans. Further information may be obtained from Ralph M. Hogan, Head, Manpower Branch, Human Resources Division, Office of Naval Research, Washington, D. C.

Future Production of Scientists

An analysis of the growth trends in secondary, college, and graduate education indicated that the enrollments in all have grown rapidly during the past half century, but, of the three, graduate education has consistently grown the most rapidly. There is some evidence to suggest that the three levels have taken hold in waves about 30 years apart. Hence, the curve of future growth in graduate work may perhaps be indicated by what is currently happening on the secondary level.

The rapid development on the doctoral level is not an isolated phenomenon but is well supported by growth on all lower educational levels. There is at present no statistical indication that the growth in the number of doctor's degrees, whether in all fields or in science fields, is slackening. Obviously a curve which is increasing at an accelerating rate must slow down sooner or later, possibly to take on an ogive shape, but the present rapid growth in the number of doctorates may well continue for some time.

The future course of the doctoral trend curve will depend basically on the capacity of the Nation to utilize such highly educated and specialized talent. It will depend also on the social actions taken to expand educational facilities, to make them financially and educationally available to increasing numbers of individuals, and to make vocational opportunities more real and attractive.

Doctor's Degrees Earned, 1936–48

Approximately 20,000 persons earned doctor's degrees in science in the United States during the school years 1935–36 through 1947–48; only one-tenth of these were women. Twenty-eight fields of science were represented, with chemistry accounting for about one-third of the total number of degrees granted. If, however, the many branches of biology were used as a single, inclusive field, it would account for almost as many degrees as chemistry.

The median age of this group of persons at the time they received their doctorates was 28, with most of them being between the ages of 25 and 30. More than half of the scientists took at least 6 years to earn their doctor's degrees after having earned their bachelor's. In 1948 the median age of the group was 36, with about one-third of them being between 34 and 38 years of age.

More than a fourth of this group of scientists were born in the four populous States of New York, Illinois, Pennsylvania, and Ohio, and a total of only 15 States included the birthplaces of two-thirds of the group. The North produced 72 percent of them, the South 16 percent, and the West 12 percent. In terms of the ratio of future scientists born per person in the total population, however, the West led, being 40 percent above the North.

Training and Employment

As to undergraduate training, 14 institutions provided bachelor's degrees to one-fourth of the future scientists. The University of California led by a large margin, with the University of Illinois second.

Doctor's degrees were awarded to these scientists by 93 different institutions, but the same 14 mentioned above as leading in bachelor's degrees also led in granting doctorates. Cornell University awarded the greatest number of the higher degrees, with the University of Wisconsin second. When the degrees were considered according to the various fields of science, it was found that Massachusetts Institute of Technology gave the largest number of degrees in each of 4 fields; and Cornell, Wisconsin, Harvard, and Chicago each ranked first in each of 3 separate fields of science. The University of California appeared to be the most diverse, since it ranked among the top 6 producers of doctorates in each of 17 fields of science.

Half of the 20,000 scientists found major employment in educational institutions. Almost 30 percent of them were employed in industry, and 12 percent worked for the Government. The categories are not completely exclusive, since a university instructor might also work part time on research for Government or industry.

Most of these scientists found employment in metropolitan districts, which are areas in or surrounding cities of 50,000 or more population. More than one-third of them, in 1948, were employed in the 4 States of New York, California, Pennsylvania, and Illinois. In terms of geographic divisions, nearly half of them were living in the Middle Atlantic and the East North Central Divisions.

Apparently because of employment opportunities, certain States, such as Delaware, draw many scientists from outside, whereas others, such as Kansas, do not hold even the small number born there. Twenty-six States employed fewer scientists than were born within their boundaries, and 23 (including the District of Columbia) employed more.

Physicists and Institutions Training Them

Among the large group of scientists who earned doctor's degrees between 1936 and 1948 were 1,700 persons whose major field was physics. This group was selected for special study.

The number of physics doctorates granted in 1900 was only 15 as compared with 358 granted in 1950. This is a 24-fold growth. When related to the total population, there were 12 times as many physics doctorates awarded per million persons in 1950 as in 1900.

Twice as many physicists were born in New York State as in any other State. Pennsylvania, Ohio, and Illinois followed in order. More than half of the physicists were born in the Middle Atlantic and the 2 North Central Divisions. Some 11 percent of the physicists were foreign-born.

There were 339 institutions which conferred bachelor's degrees on the 1,700 persons who later earned physics doctorates. Three schools—the Massachusetts Institute of Technology, the University of California, and the University of Chicago—conferred not only the greatest numbers of baccalaureate degrees on physicists but also the greatest numbers of doctorates. The educational institutions located in the 4 States of New York, California, Massachusetts and Illinois conferred more doctorates in physics during the period from 1936 to 1948 than did all other institutions of the United States combined.

Employment and Migration of Physicists

The 4 major occupational specialities within the field were found to be nuclear physics, which included 17 percent of the physicists; atomic and molecular physics, with 12 percent; and optics and electronics with about 10 percent each. Approximately 40 percent of the physicists indicated no area of specialization. This latter group is probably made up largely of teachers of physics.

In 1948 the physicists were concentrated in a few geographical areas. The Middle Atlantic Division had more in actual numbers than the next two divisions combined. In terms of the 1940 population, the New England Division had the highest ratio, 20 physicists per million. The metropolitan districts which attracted the greatest numbers of physicists were New York and Washington, D. C.

The over-all migration of this group, from their birthplaces to their places of employment in 1948, was generally eastward. With few exceptions they tended to remain in the divisions of their birth for their bachelor's and for their doctor's degrees. The graduate students of the Mountain and East South Central Division, however, usually went eastward and northward for their doctorates. There were 42 percent of the physicists who were, in 1948, employed in the same divisions in which they received their doctorates. Many others had moved to the Middle Atlantic and South Atlantic Divisions. Only about 30 percent of the physicists born in any division were employed in that same division in 1948, leaving 70 percent who had found employment elsewhere. The physicists were therefore a highly mobile group.

Geographic Mobility in the Pacific Division

Because of interest in the mobility of highly educated scientists, it was decided to study an areal subgroup consisting of all scientists in the study who were associated with the Pacific Division. Association, for this purpose, was counted as being born in the division, earning a bachelor's or a doctor's degree there, or being employed there (in 1948). These data can be analyzed meaningfully by using any one of the four events as a base.

Of the 3,700 scientists, 19 percent of the total group, associated with the Pacific Division on one or more of the four criteria mentioned, only about one-fifth were born there. More than twice that many received bachelor's degrees there, and a slightly larger number earned doctorates in the Division. In 1948 the Pacific Division employed 2,134 of the scientists studied. This is 266 percent of the number known to have been born there and is probably a result of westward migration after the second World War.

The Pacific area seemed able to hold a goodly number of the future scientists it produced. Of those born there, 82 percent remained for their bachelor's degrees, and of these more than half also remained for their doctoral work. Of the group born there who remained for both degrees, more than half were employed there in 1948, whereas of those who left the Division for one or both degrees, only 17 percent were employed there.

While half of the future scientists who earned their bachelor's degrees in the Pacific Division were natives, 365 of the students were born in the two North Central and the Mountain Divisions. Foreign countries contributed 10 percent (130) of the group doing undergraduate work there. Almost 60 percent of the group who earned bachelor's degrees there remained for their doctoral work.

Using doctor's degrees as the basis for analysis

of the group, only 30 percent of the scientists who received doctorates in the Pacific Division had been born there, but 56 percent of them had received bachelor's degrees there. At the time of the study, 52 percent of this group who earned doctor's degrees there were employed in the Pacific Division, and 25 percent were in the Middle Atlantic, East North Central, and South Atlantic Divisions.

Of the total number of scientists employed in the Pacific Division in 1948, only 26 percent had been born there. One-third of them had been born in the two North Central and Middle Atlantic Divisions. Less than half (45 percent) had received bachelor's degrees in the Division, and only 48 percent had received doctorates there. Obviously, then, the Pacific Division has drawn and held scientists from a great many other areas of the United States and also from foreign countries.

Improvement of Higher Education in Japan

BY WALTER CROSBY EELLS *

DURING the autumn of 1950 the writer carried out a comprehensive analysis and appraisal of the situation existing among the more than 200 universities and 150 junior colleges which constituted the system of higher education in Japan as reorganized according to basic laws adopted by the Japanese Diet in 1947, 1949, and 1950. This appraisal resulted in a carefully formulated series of briefly stated recommendations for further constructive improvements in these institutions in the years ahead. These recommendations and the extensive data supporting them were made the subject of a series of discussions extending into the early spring of 1951 by the professional members of the staff of the Civil Information and Education Section of the Supreme Commander for the Allied Powers, the agency which during the 5 years of the Occupation has been assigned the major responsibility for advising Japanese educational leaders.

Part I. Recommendations

As a result of the activity described above, the following list of 32 recommendations on desirable developments in higher education in Japan was adopted as official policy of the Civil Information and Education Section. These recommendations have been distributed for consideration of Japanese agencies concerned with higher education. In no sense, however, are these recommendations to be interpreted as a directive to Japanese educational authorities; rather, they are the considered advice of the Section—advice which the Japanese may accept or reject as they see fit.

University Organization and Control

1. Encourage in every way possible the maximum of local control of Higher Education by both lay and professional groups. In this connection the functions of the University Grants Commission of Great Britain, and its relation to the British Ministry of Education, may be usefully examined.

2. Encourage the early development of a comprehensive law for the adequate financing of national universities based upon objective methods.

3. Recommend limiting the function of the University Chartering Committee to initial decision on actual chartering of an institution.

*Formerly chief, Higher Education Branch, Education Division, Civil Information and Education Section, General Headquarters, Supreme Commander for the Allied Powers, Tokyo, Japan. Dr. Eells has recently retired. Much background information regarding the problems encountered and results achieved in the extensive reorganization of higher education in Japan during the Occupation may be found in the two volumes edited by the writer: *Education in the New Japan* (Tokyo and Washington, May 1948. Available from the Superintendent of Documents, Washington, D. C., for $3.75); and in his article, "Recent Educational Developments in Japan," *Educational Record*, 32; 380–392, October 1951. The present article looks entirely to the future on the basis of the significant developments of the 6 years of the Occupation.

4. Recommend transferring, as rapidly as possible, all responsibility for administration of university standards from the University Chartering Committee to the University Accreditation Association. This would include follow-up studies by the Accreditation Association of conditions initially formulated by the Chartering Committee.

5. Advise that standards for chartering new universities and junior colleges be applied more rigorously than has been done in the past.

General Administrative Responsibility

6. Recommend that after a suitable transitional period, the only method in the graduate school for securing the Master's and Doctor's degrees be through the minimum period of residence and other requirements as now formulated by the University Accreditation Association.

7. Recommend that the title of *gakushi* to designate graduation from a 4-year university be considered a university *degree* of the same type as the doctor's or master's degree.

8. Recommend that full responsibility be given to university administrators for all phases of health conditions and personal health services and physical education, including responsibility for financing and management of intercollegiate and intramural athletics.

9. Encourage, by all methods consistent with generally accepted concepts of university freedom and autonomy, the removal from university staffs and student bodies of communistic and other totalitarian influences.

10. Support vigorously adequate increases in scholarship funds for deserving students and their administration on an impartial basis.

11. Encourage increase in number of educational leaders, teachers, and students to be sent to the United States and other foreign countries for observation and study.

Educational Needs

12. Organize or stimulate continuing studies, on both Nation-wide and regional bases, of probable annual needs for graduates in all major professional and semiprofessional fields in Japan.

13. To meet present emergency needs for elementary school teachers, encourage universities to popularize in every way possible 2-year courses for education of public school teachers, women as well as men, in addition to the established 4-year courses for training teachers.

14. Encourage universities to establish and popularize semiprofessional courses (usually two years in length) in agriculture, commerce, homemaking, technology, and similar fields, in addition to their established 4-year courses in such fields.

15. Recommend giving recognition and prestige to satisfactory completion of 2-year courses at the semiprofessional level, whether in universities or in junior colleges, through authorization and popularization of suitable academic recognition.

16. Encourage the utilization of higher educational facilities by young women far more extensively than has been done up to the present time.[1]

University Buildings and Grounds

17. Encourage long range comprehensive plans for physical consolidation of buildings and grounds of national universities in one or two localities in each prefecture, in accordance with recommendations to be made by the national committee already appointed to study this problem.

18. Make detailed studies with a view to more economical utilization of classrooms, laboratories, and physical education facilities.

19. Stress strongly the importance of cleaning up buildings and grounds of universities, including dormitories as well as classroom buildings; and continued maintenance of cleanliness and sanitary conditions.

Personnel Factors

20. As a matter of general policy, discourage the appointment of university presidents who are over 60 years of age.[2]

21. Recommend substantial increases in salaries of all university professional personnel.[3]

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[1] Prior to the Occupation, university education in Japan, except for a few exceptional cases, was not open to women. Under the reorganization, the more than 200 universities are now open to women and 30 are for women only. Equality of educational opportunity at the university level, however, is still largely a hope and a prospect rather than a reality. This year the entering class of the 70 national universities consisted of 43,792 students of whom less than 9 percent were women. Tokyo and Kyoto universities are commonly recognized as the two leading national universities. The former admitted 2,001 men and 38 women this year; the latter, 1,528 men and only 1 woman.

[2] Seventy percent of the presidents of the 70 national universities in Japan are over 60 years of age. Only one is under 50. Many of them are retired university professors who have been honored by appointment as university presidents. Such is the Oriental respect for age. In all too many cases they lack the vigor, the initiative, the dynamic leadership, and the life expectancy to cope with the many problems of reorganization required for the development of truly effective universities in Japan.

[3] The inadequacy of university salaries is little short of tragic. The presidents of Tokyo and Kyoto Universities receive the equivalent of $92 per month, of which $29 is taken by income tax. The median monthly salary of a professor in a national university is $42; in a private university, $28.

22. Recommend a critical examination of teacher-student ratio and teaching hours per week with a view to determination of appropriate teaching load for university professors in the light of a realistic appraisal of all significant factors.

Student Personnel Services

23. Recommend the development of modern concepts of guidance and provision of competent personnel and materials for administration of them.

24. Stress the importance of developing an atmosphere of mutual understanding, sympathy, and cooperation between students and faculty, to replace the present too common attitude of indifference, suspicion, or positive hostility.

25. Encourage the development of more effective and better coordinated programs of appropriate types of students government in every higher education institution.

Use of Libraries

26. Encourage the training of proficient professional librarians and give them full professorial status and salary on the university staff.

27. Recommend special consideration be given to the importance of improving book stocks, periodicals, equipment, and facilities of university libraries.

28. Recommend special consideration to changing the attitude of the average university administrator and professor toward the basic importance of the library as an essential tool in the educational process.

Teaching Method and Organization

29. Encourage and stimulate professors to place less dependence on the lecture method in the conduct of university classes, with a much greater degree of student discussion and other types of active participation.

30. Encourage and stimulate professors to study specific methods of improving their lectures, when it is desirable that the lecture method be used.

31. Recommend limiting the normal student weekly program of 15 semester credits (exclusive of physical education) to a maximum of 16 semester credits for new students and to 18 semester credits for students of proved superior ability after their first year of study. Stress for all students that the normal program is intended to require an average of 45 hours of a student's time per week in the classroom or laboratory and in outside individual related study; and that students compelled to spend a substantial part of their time in outside remunerative work (*arbeit*), should have their academic load reduced correspondingly, and should expect to take longer than 4 years to complete the standard university course of study.

32. Recommend re-introduction and enforcement of university regulations requiring student attendance at scheduled undergraduate university classes unless excused for adequate cause.

Part II. Comments on the Recommendations

It is difficult to assign priorities among the 32 recommendations listed above. All are important, and they are all closely interrelated. Basic to most of them is the matter of more adequate financial support. For this reason first importance should perhaps be given to Nos. 2, 10, and 21. But matters of control, student-faculty relationships, appropriate courses of study, use of libraries, better teaching methods, and improvement of student attendance are also of basic importance. Therefore, special stress should also be placed on Nos. 5, 14, 24, 28, 29, and 32.

While the above recommendations have been developed with national universities especially in mind, most of them are applicable, in whole or in part, to private universities and to prefectural and municipal universities as well. No. 17 is the only one which does not have implications for private universities.

While the above recommendations do not specifically mention junior colleges except in Nos. 5 and 15, they are all intended to apply to junior colleges as well as to 4-year universities.

Implementation of the Recommendations

1. The above recommendations involve many changes of educational philosophy, of attitudes, and of method. They require both reeducation of the present educational leaders and the development of new ones. It is accordingly recommended that they be placed in the hands of various groups for consideration and aid in their gradual but effective implementation, and that copies be furnished to the following Japanese groups and agencies, and to such others as may be considered desirable: Association of Colleges for Teacher Education, Association of Private Junior Colleges, Association of Public Junior Colleges, Association of National Universities, Association of Private Universities, Association of Public Universities, Japan University Professors Association, Japanese Education Reform Council, Japanese

Ministry of Education, University Accreditation Association, and University Chartering Committee.

2. It is further recommended that these recommendations be also made available to staff members of the Institute for Educational Leadership for such discussion with their groups as they may deem appropriate.

3. In the final analysis the crying need is for trained, intelligent, progressive, indigenous leadership in Japanese universities. With such leadership, most if not all of the preceding 32 suggestions can be achieved. Without such leadership, few if any of them can be made permanently effective.

Development of Leadership

Development of competent leadership is a long-time problem. Several methods for its development may be briefly mentioned, all of which can be influential, but no one of which can be sufficient by itself.

Ministry of Education Activity.—The Ministry of Education should emphasize constructive leadership rather than administrative control for the universities of the country. With a proper conception of such a function it can organize and staff conferences and provide other means of developing progressive leaders not open to any foreign group no matter how good their intentions may be. But it must not be a case of blind leaders of the blind, else the attempted remedy may be worse than the disease.

Local Demonstration Centers.—A limited number of universities, probably in the Tokyo area on account of the location there of the Civil Information and Education Section, which show real promise of absorbing and applying progressive methods and ideas could be selected. Assistance and advice could be concentrated on them on the part of the Section in order to develop, if possible, institutions which, if not models, can at least serve as visible centers of commendable practices and methods which other universities might emulate. Something similar to the work initiated in a dozen centers in the field of Vocational Agriculture Education illustrates the principle.

Visits from Leading American Educators.—Continuation, as long as feasible, of sessions of the Institute for Educational Leadership staffed by competent American educators will be helpful. Special projects, such as the Institute on Medical Education, or the Stanford-American Study Group, recently in Japan, or the older Cultural Science Mission, American Pharmaceutical Association Mission, or the Educational Exchange Survey Mission have been effective in focusing attention in special fields and in the development of better leadership and organized research in those fields. Such projects should be continued and extended to other major educational areas, including engineering, agriculture, and dentistry.

Japanese Students to America.—In some respects it is felt that highly significant results in training future progressive leaders can be achieved by sending increasing hundreds of carefully selected, promising young men and young women to America to study for a year or more in American colleges and universities and learn by example and association the methods of universities in a democratic society. If hundreds of such men and women could come back in the next few years to university positions as presidents, as deans, as professors, as guidance officers, and as finance officers, changes would have a good chance of occurring in university practices that never would happen through any local influences that the Civil Information and Education Section alone might exert.

Foreign Instructors in Japan.—Special conferences with foreign instructors on the staffs of Japanese higher educational institutions would also appear desirable in view of their wide experience of local conditions and problems.

Defense Information Bulletin

ACCORDING to a new *Defense Information Bulletin* it is anticipated that the short supply of steel, copper, and aluminum for school, college, and library construction will continue into the fourth quarter of 1952. This situation necessitates continuance of efforts on the part of school officials, architects, and contractors to curtail the use of critical materials. It will also require deferring plans for construction of gymnasiums, auditoriums, and student unions, and limiting construction to essential classroom housing and related facilities.

Because of limitations resulting from the first quarter 1952 allocation of steel for college and library construction, it has been necessary to defer temporarily approval of all applications for authority to commence construction in first quarter 1952 and to reschedule structural steel allotments previously made to a number of college and library

projects from the first to the second quarter 1952. Projects selected for such rescheduling were those in the two lowest priority categories of projects under construction which had not previously been delayed by rescheduling and which involved 10 or more tons of structural steel.

It is expected that the Defense Production Administration will have made its program determination and allocations of steel, copper, and aluminum for the second quarter 1952 for school, college, and library construction on or before January 15, 1952.

Course for Editors of Alumni Publications

EDITORS of college alumni publications are to gather on the campus of the Oklahoma Agricultural and Mechanical College, Stillwater, March 24–29, 1952, for their first annual short course to be held as part of the sixth annual industrial editors short course. The course is an organized program of class and laboratory sessions designed to bring to editors the latest information in production and editorial techniques. Howard W. Mort, editor of the University of Chicago Magazine, will be the leader of editorial sessions; Kenneth B. Butler, of the Medill School of Journalism, Northwestern University, will lead the production sessions. Further information can be had from the Technical Journalism Department, Oklahoma A. and M. College, Stillwater.

International Week End

THE NEW JERSEY COLLEGE FOR WOMEN, Rutgers University, in November sponsored a 3-day conference of some 60 overseas students meeting with the undergraduate student body for an exchange of opinions. The conference was designed to give both groups a new perspective on America. Five panels explored five areas of American life—character and ideology, cultural expression, the economy, education, and politics. The 60 visitors were of 28 nationalities and are attending 17 colleges and universities, mostly on the East coast.

The plan of inviting overseas students from other eastern schools was developed and carried on by students themselves through their government association. The only nonstudents who spoke at the conference, aside from faculty moderators, were Prof. Richard C. Snyder of Princeton University and Norman Cousins, editor and journalist. This was the third of such conferences held at the college during the past year and a half.

Problems of an Atomic Age

THE PIONEER COURSE in "Problems of an Atomic Age" is being given for the third year this winter at Kent State (Ohio) University. The course originated with a freshman who presented the idea in a composition.

Thirteen different departments cooperate in the course; 33 professors deliver lectures and take part in the panel discussions. The only off-campus speaker will be the county head of civil defense. Students, townspeople, and others attend the 21 sessions, which are scheduled Tuesday and Thursday afternoons from 3 to 4:30. Students taking the course for credit take a brief quiz before each class session.

The two principal themes of the course are nuclear fission in peace, and nuclear fission and fusion and the problem of war.

NEW PUBLICATIONS

Government Publications

How To Obtain

(*1*) *Cost Publications: Send request, enclosing remittance (check or money order), to the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C.*

(*2*) *Free Publications: Request direct from the agency issuing them.*

From the Office of Education

Teachers Contribute to Child Health, by Elsa Schneider and Simon A. McNeely. Washington, U. S. Government Printing Office, 1951. Bulletin 1951, No. 8. 44 p. 20 cents.

From Other Government Agencies

General Services Administration, National Archives and Records Service, Federal Register Division. *Handbook of Emergency Defense Activities*, Oct. 1951–Mar. 1952. Washington, U. S. Government Printing Office, 1952. 119 p. 30 cents.

United Nations Educational, Scientific and Cultural Organization. *Trade Barriers to Knowledge:* A Manual of Regulations Affecting Educational, Scientific and Cultural Materials. Paris, UNESCO, 1951. Distributed by Columbia University Press, 2960 Broadway, New York 27, N. Y. 168 p. Paper, $1.

United States National Commission for UNESCO. *A Junior High School Looks at UNESCO.* Washington, U. S. Government Printing Office, 1951. 26 p. 15 cents.

Non-Government Publications

Central Missouri State College, *Progress Report, 1945–50.* Warrensburg, Mo., Central Missouri State College, 1951. 40 p.

Creative Leadership of Adult Education, by Paul L. Essert. New York, Prentice-Hall, Inc., 1951. 333 p. $5.

Written to give adult educators in universities and in the field a better picture of the scope, problems, and potentialities of adult education; also intended as a presentation of some principles that will give more unified and cohesive direction to the many aspects of adult education, and some practical skills and techniques of leadership in the field. Two chapters deal with the goals of leadership of adult education, eight chapters apply the stated criteria of adult education to adult study for personal objectives and for community development, and five chapters deal with establishing and maintaining a program.

Fellowship Opportunities for American Students to Study Abroad, 1952–53. New York, Institute of International Education, 1951. 11 p.

Improving College Teaching, by Class in Higher Education, University of Oregon. Eugene, Oreg., School of Education, University of Oregon, 1951. 46 p. Mimeo. Paper, 60 cents.

A compilation of ideas, largely in outline form, on the teaching environment, methods and technique, and evaluation procedures.

Looking Toward the Future in Higher Education, by James C. Baker. 810 Broadway, Nashville 2, Tenn., The Methodist Church, Division of Educational Institutions, 1951. 8 p. Free.

Devoted to the idea that "if we can imaginatively re-create for our church the great and central meanings of education and make clear that Methodist institutions today are purposing to render the unique and priceless services which church-related institutions alone can render, we shall find them rising up to sustain those institutions." Describes some history related to the theme.

A New Approach to Retirement Income, by William C. Greenough. New York, N. Y., Teachers Insurance and Annuity Association of America, 1951. 55 p. Paper, 50 cents.

This report, prepared by the vice president of the Teachers Insurance and Annuity Association of America, proposes the creation of a College Retirement Equities Fund, which would invest in common stocks as a supplement to the fixed dollar income offered by traditional plans whose funds are invested primarily in fixed dollar obligations.

Teacher Education in Oregon—Opinion Survey, by Hugh B. Wood and Others. Eugene, Oreg., School of Education, University of Oregon, 1950. 16 p. Mimeo. Paper, 25 cents.

A questionnaire study, by doctoral candidates, of opinion in Oregon regarding the type of institution in which teacher education should be offered, qualities and competencies required for successful teaching, general characteristics of the teacher education program, and specific characteristics of the program.

Universities and World Affairs, by Howard E. Wilson. New York 27 (405 West 117 Street), Carnegie Endowment for International Peace, 1951. 88 p. $1.

Suggests the range of responsibilities of the universities in the conduct of world affairs, presents an exploratory survey of activities bearing on international relations in eight American universities, and formulates a checklist of questions that can be used by other institutions as starting points for self-appraisal.

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MANAGING COMMITTEE

Lloyd E. Blauch, Chairman

Jennings B. Sanders **Bernard B. Watson**

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